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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,443	02/07/2006	Yoshiaki Nagata	80658(47762)	5049
21874 7590 08/07/2009 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205				
EXAMINER				
RIDER, LANCE W				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/567,443

**Applicant(s)**

NAGATA ET AL.

**Examiner**

LANCE RIDER

**Art Unit**

4131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 February 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-8 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 07 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☒ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-850)  
Paper No(s)/Mail Date 02/07/2006 and 11/14/2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1-8 are currently pending.

### ***Information Disclosure Statement***

The Information Disclosure Statements (IDS)s, filed by applicant on February 7<sup>th</sup> 2006 and November 14<sup>th</sup> 2006 have been considered by the examiner in the present case.

### ***Priority***

This application, filed September 4<sup>th</sup> 2005 is a national stage entry of PCT/JP2004/012606 filed on August 25<sup>th</sup> 2004 which claims priority from a Japanese patent application JP2-3-301171 filed on August 8<sup>th</sup> 2003. A certified copy of the Japanese application was filed on JP2-3-301171.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

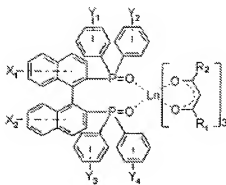
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

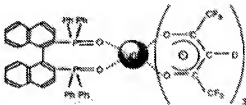
**Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomita, T. et al. (Rare Earths, 2002).**

Claims 1-5 are directed to a chemical composition comprising the complex of BINAPO with hfa (2-fluoroacetic acid) and derivatives thereof, with the chemical

structures disclosed *infra*, wherein  $X_1$ ,  $X_2$ ,  $Y_1$ ,  $Y_2$ ,  $Y_3$ , and  $Y_4$  can be hydrogen,  $R_1$  is a trifluoromethyl group, and  $Ln$  can be Europium.



Tomita, T. et al. (Rare Earths, 2002) discloses in figures 2, 3, 4, and in table 1, the complex of BINAPOL with Europium and hfa-D or hfa, and illustrates the structure *infra*.



Tomita, T. et al. (Rare Earths, 2002) discloses a BINAPOL, europium, hfa complex in which all of the phenyl ring positions are hydrogen and the  $R_1$  position of the diketone is a trifluoromethyl group. Tomita, T. et al. (Rare Earths, 2002) discloses a species which fits all of the aspects of the complex claimed in claims 1-5 and therefore anticipates the currently claimed invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

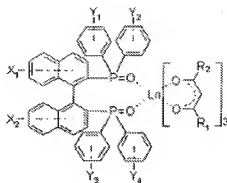
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

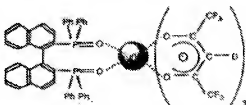
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita, T. et al. (Rare Earths, 2002), in view of Alburger, J.R. (U.S. Patent 3,567,932).**

Claims 1-6 are directed to a chemical composition comprising the complex of BINAPO with hfa (2-fluoroacetic acid) and derivatives thereof with the chemical structures disclosed infra, wherein X<sub>1</sub>, X<sub>2</sub>, Y<sub>1</sub>, Y<sub>2</sub>, Y<sub>3</sub>, and Y<sub>4</sub> can be hydrogen, R<sub>1</sub> is a trifluoromethyl group, **R<sub>2</sub> is a thienyl group**, and Ln can be Europium.



Tomita, T. et al. (Rare Earths, 2002) discloses in figures 2, 3, 4, and table 1 the complex of BINAPo Europium and hfa-D and hfa and illustrates the structure infra.



Tomita, T. et al. (Rare Earths, 2002) discloses a BINAPo, europium, hfa complex in which all of the phenyl ring positions are hydrogen and the R<sub>1</sub> position of the diketone is a trifluoromethyl group.

Tomita, T. et al. (Rare Earths, 2002) does not disclose the use of a diketone coordinating compound in which R<sub>2</sub> is a thienyl group.

Alburger, J.R. (U.S. Patent 3,567,932) discloses in column 5, lines 14-69, fluorescent metal-organic coordination compounds. In line 36 europium is disclosed and in line 66 the compound 4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione is disclosed which is a diketone containing a trifluoromethyl group at R<sub>1</sub> and a thienyl group at R<sub>2</sub>. The

coordination complex of europium and 4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione is disclosed in example 1.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to substitute the diketone 4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione used in fluorescent dyes as disclosed by Alburger, J.R. (U.S. Patent 3,567,932) into the complex of Tomita, T. et al. (Rare Earths, 2002). Both the diketone hfa of Tomita, T. et al. (Rare Earths, 2002) and the diketone, 4,4-trifluoro-1-(2-thienyl)-1,3-butanedione Alburger, J.R. (U.S. Patent 3,567,932) were known to be useful in the formation of fluorescent dye complexes with europium. Further both compounds chelate the europium in a similar fashion and share the same core structure providing this function. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to substitute 4,4-trifluoro-1-(2-thienyl)-1,3-butanedione for the diketone hfa in order to form a fluorescent compound which is brighter than complex using hfa. Alburger, J.R. (U.S. Patent 3,567,932) discloses that the use of 4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione is useful to form such highly fluorescent metal-organic dyes.

**Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita, T. et al. (Rare Earths, 2002) and Alburger, J.R. (U.S. Patent 3,567,932), as applied to claims 1-6 above, and in further view of Gladiali, S., et al., (Tetrahedron Asymmetry, 1998) and Norton T.R., et al., (U.S. Patent 2,723,982).**

Claims 7 and 8 are drawn to the compounds of claims 1-6 stated supra in which the purity of the compounds are greater than 70%ee or 90%ee.

Tomita, T. et al. (Rare Earths, 2002) and Alburger, J.R. (U.S. Patent 3,567,932) disclose the chemical composition comprising the complex of BINAPO with hfa (2-fluoroacetic acid) and derivatives thereof with the chemical structures disclosed supra, wherein X<sub>1</sub>, X<sub>2</sub>, Y<sub>1</sub>, Y<sub>2</sub>, Y<sub>3</sub>, and Y<sub>4</sub> can be hydrogen, R<sub>1</sub> is a trifluoromethyl group, R<sub>2</sub> is a thienyl group, and Ln can be Europium.

Pure materials are novel vis-à-vis less pure or impure materials because there is a difference between pure and impure materials. Therefore, the issue is whether claims to a pure material are unobvious over the prior art. In re Bergstrom, 427 F.2d 1394, 166 USPQ 256 (CCPA 1970). Purer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious. Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). Factors to be considered in determining whether a purified form of an old product is obvious over the prior art include whether the claimed chemical compound or composition has the same utility as closely related materials in the prior art, and whether the prior art suggests the particular form or structure of the claimed material or suitable methods of obtaining that form or structure. In re Cofer, 354 F.2d 664, 148 USPQ 268 (CCPA 1966)

In the particular case Tomita, T. et al. (Rare Earths, 2002) and Alburger, J.R. (U.S. Patent 3,567,932) disclose the compounds instantly claimed and the disclosed compositions of the prior art have the same utility instantly claimed compositions. The



prior art also suggests the particular form or structure of the claimed material and suitable methods of obtaining that form or structure.

Tomita, T. et al. (Rare Earths, 2002) and Alburger, J.R. (U.S. Patent 3,567,932) do not specifically disclose the optical purity of the compounds as being 70%ee or 90%ee or more. Though the prior art for making the complexes claimed are silent as to the optical purity of the compounds used, the prior art for making these compounds is not.

Gladioli, S., et al., (Tetrahedron Asymmetry, 1998) discloses in the abstract, the methods on page 392, and in figure 1, methods for making enantiopure BINAPO. Norton T.R., et al., (U.S. Patent 2,723,982) discloses in column 5, lines 10-26 methods for making and purifying thienoyltrifluoroacetone (4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the methods of purification and synthesis disclosed by Tomita, T. et al. (Rare Earths, 2002) and Alburger, J.R. (U.S. Patent 3,567,932) to make pure forms of the two compounds 4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione and BINAPO in order to form enantiopure complexes of these compounds. The use of the pure forms of these compounds would allow for greater optical rotation of the light and provide increased circular polarization as was known in the art at the time of the invention for compounds with high optical purity.

***Conclusion***

No claims are currently allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LANCE RIDER whose telephone number is (571)270-1337. The examiner can normally be reached on Monday through Friday, 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Nolan can be reached on 571-272-0847. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LANCE RIDER/  
Examiner, Art Unit 4131

/Patrick J. Nolan/  
Supervisory Patent Examiner, Art Unit 4131